Gender and Heuristic Driven Biases: A Review of Literature

Dr. Amit A Rajdev
Assistant Professor – Finance,
MBA Department, Atmiya Institute of Technology & Science (AITS), Rajkot (Gujarat), India.

Mr. Amit M Raninga
Assistant Professor – Finance,
MBA Department, Atmiya Institute of Technology & Science (AITS), Rajkot (Gujarat), India.

Abstract

Investors are not rational at the time of taking investment decisions. Behavioural finance, the blending of psychology and finance, reveals that men and women suffer from heuristic driven biases that include overconfidence, optimism, herding and hindsight and anchoring bias. Male investors exhibit overconfidence and are highly optimistic compared to their female counterparts. On the other side, female investors have strong effect of herding, hindsight and anchoring bias. It is due to their personality traits and psychological differences that results into differences in heuristics.

Keywords-Behavioral finance, heuristics, hindsight bias, anchoring.

I. INTRODUCTION

"Only two things are infinite, the universe and human stupidity, and I'm not sure about the former."

\- *Albert Einstein*

Economic theory of utility assumes rationality in decision making. Rationality refers to the process of taking decisions based on logic and information provided. The approach is unbiased and systematic in nature. The emergence of behavioural finance in late nineteenth century has revealed that investors display non economic motives and biases in investment decisions. The blending of psychology and finance, popularly known as behavioural finance, explores deviations from predictions based on rational models. Research in every other social and behavioural science indicates substantial difference in the behaviour of men and women in noneconomic settings (Eckel, C. C., & Grossman, P. J. 1998). The gender similarities hypothesis holds that males and females are similar on most, but not all, psychological variables (Hyde, J. S. 2005). When it comes to finance and investment; men and women exhibit different behavioural pattern. There is dearth of research work that analyse the differences in behavioural biases based on gender. The objective of this paper is to analyse the differences in heuristic driven biases of males and females based on review of behavioural finance literature. Jonathan, M. (1999) found that while men tend to be focused on results, goal directed and single minded with higher risk tolerance levels as well as high over-confidence levels, women, on the other hand, are multi-focussed, process driven, less tolerant of risk and less prone to over confidence.

II. REVIEW OF LITERATURE

Behavioral Finance & Heuristic Biases

According to Prosad, J. M. (2014) proponents of behavioural finance found flaws in other standard finance theories like the capital asset pricing model (CAPM), the Markowitz portfolio selection model and the efficient market hypothesis (EMH). Standard finance theories assumed that "investors are rational"; however the birth of behavioural finance came up with new assumption that "investors are not rational but normal". It focuses on irrational behaviour of individuals in the economy. Prospect theory developed in the early 1980s by the psychologists Daniel Kahneman and Amos Tversky, represents an important milestone in this context (Goldberg and von Nitzsch 2001).

Investopedia explains prospect theory as theory that people value gains and losses differently and, as such, will base decisions on perceived gains rather than perceived losses. Thus, if a person were given two equal choices, one expressed in terms of possible gains and the other in possible losses, people would choose the former. The other way of looking at theory is that people make decisions on the basis of subjective assessments of probabilities which might be different from the objective or true one. This logic is reflected in *'heuristics'* or *'biases'* that people use at the time of taking decisions (Kumar, A. 2009). A *heuristic technique*, or simply a *heuristic*, has originated in 19^{th} century from Greek word *'heuriskein'* which means 'to find' or 'to discover'. It refers to approach of learning based on some practical methods or rule of thumb which is not a guaranteed to be optimal or perfect.

The word "Bias" has been defined as "tendency towards a certain disposition or conclusion" (Wolman, 1973, p. 44). The Behavioural Finance literature considers bias as a systematic deviation from the norm, or an inclination for a particular judgment (Shalini Kalra Sahi Ashok Pratap Arora, (2012). As defined by Hersh Shefrin, bias is nothing else but the "predisposition towards error" (Shefrin, 2007). Jaya Mamta Prosad Sujata Kapoor Jhumur Sengupta (2015) categorized biases into two major categories Heuristic driven biases and Frame dependent biases. Heuristic driven biases are based on the assumption that future performance of the stock can be best predicted by past performance. It can be further sub classified into overconfidence, anchoring and adjustment, reinforcement learning, excessive optimism and pessimism. The frame dependent biases include narrow framing, mental accounting and the disposition effect. It is based on the assumption that investors are influenced by the way they frame their options.

III. GENDER & HEURISTIC DRIVEN BIASES

The literature on behavioural finance reveals differences in behavioural biases amongst male and female investors. The conceptualisation of gender is more important in analysis of these differences. The term gender is not dynamic and fluid in nature but constant and assumed to be similar with sex (i.e. biological category). When it comes to heuristic driven biases it is observed that male investors are more overconfident and optimistic compared to their female counterparts. They are less prone to herding, hindsight bias and anchoring.

A. Excessive Optimism

Optimism is defined as tendency of individuals to overestimate the probability of a favourable outcome. Optimism is positively related with risk-taking but there is little empirical evidence (Heminway, J. M. 2008; Felton, J., Gibson, B., & Sanbonmatsu, D. M. 2003). Female investors are found to be less optimistic and perceive themselves as lacking in investment competence more than their male counterparts (Heminway, J. M. 2008). The gender effects related to optimism have usually been viewed as the result of Type-I errors and un-interpretable (Scheier et al. 1994; Felton, J., Gibson, B., & Sanbonmatsu, D. M. 2003). Therefore, researchers have concluded that trait optimism is not detrimental for male investors but rather that it leads them to open themselves up to greater risk than their pessimistic counterparts.

B. Overconfidence & Risk Taking Behavior

Odean, T (1998) (as cited in Jaya Mamta Prosad Sujata Kapoor Jhumur Sengupta, 2015) defines overconfidence as the investors' tendency to overestimate the precision of their knowledge about the value of a security. There is evidence that women are less confident (Clark-Murphy and Gerrens, 2002) and less knowledgeable (Chen, H. & Volpe, R. P. 1998) then men on the topics of personal finance. Males generally exhibit more confidence in dealing with financial affairs (Taylor, 2003) whereas women are more conservative in their investment practices (Bajtelsmit, V. and Bernasek, 1996). The studies have shown that the single women are more risk averse (Bajtelsmit et al., 1999; Gerrans and Clark-Murphy, 2004) than single men or married couples (Sung and Hanna, 1996). While another group of researchers and financial practitioners have suggested that women choose to invest their financial resources more conservatively and are generally more risk averse than men (Bajtelsmit & VanDerhei, 1997).

Barber, B. M., & Odean, T. (2001) found that men trade 45 percent more than women. Trading reduces men's net returns by 2.65 percentage points a year as opposed to 1.72 percentage points for women. Bhandari, G., & Deaves, R. (2006) found that as highly educated males do not have higher levels of knowledge they are more subject to overconfidence. However, Deaves, R., Lüders, E., & Luo, G. Y. (2008) analyzed the impact of overconfidence and gender on trading activity using three different manifestations of overconfidence that include calibration-based overconfidence, the better-than-average effect and illusion of control. They found that there was no significant difference in any of the three overconfidence measures between genders; only in Germany was there a trading activity difference by gender, with men transacting more.

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C. Herd Behavior

In financial markets, herding is usually termed as the behavior of an investor imitating the observed actions of others or the movements of market instead of following her own beliefs and information (Hon-Snir, S., Kudryavtsev, A., & Cohen, G. 2012). It occurs when individuals mimic others, ignoring substantive private information (Scharfstein and Stein 1990, p.466). According to Burke, C., Schultz, W., & Tobler, P. (2012) more sociable individuals will be more responsive to social influence, they will be more likely to herd and so personality traits including empathy, socialisation and extraversion will correlate positively with the propensity to herd. As cited by S.E. Cross and L. Madson (1997); Bakan's (1966) frames gender differences in terms of agency and communion. He described men as agentic, which referred to self-assertion, instrumentality, and a sense of separateness from others. He described women as communal, which referred to relatedness and a desire for union with others. As women are found to be more communal and empathic compared to men it can be hypothesized that they are more prone to herding behaviour.

Cipriani, M., & Guarino, A. (2009) compared two treatments: one in which the price adjusts to the order flow in such a way that herding should never occur, and one in which the presence of event uncertainty makes herding possible. They found that women made significantly fewer contrarian decisions in the first treatment and more herd decisions in the second treatment. Jamil, S. A., & Khan, K. (2016) conducted a survey of 225 salaried investors in Oman and found that the herd behavior of investor is not related with the gender of the investor. Both the gender is equally susceptible to herd behavior.

D. Hindsight Bias

The term hindsight bias describes the observation that people are often wise only after the event. In the broadest sense, it refers to a biased representation of events or facts once they are viewed in hindsight, with knowledge about the outcome. As explained by Kudryavtsev, A., & Cohen, G. (2011); women tend to select the most valuable knowledge and pass it over, while men tend to take risks and experiment when they create or build. Therefore, it is expected that women should exhibit stronger hindsight bias. They found that since women appear to be more affected by hindsight bias, they probably learn less from experience. That is, for example, female investors and financial analysts should probably find it easier to explain "why stock X's price fell by 10% last month". They might, on average, regard (in hindsight) this outcome as being more predictable in foresight and consequently, its surprise component will serve a less useful "lesson" for their future decision-making.

E. Anchoring Bias

This bias comes into play when people have to estimate an unknown value or magnitude. Here people start their estimation by guessing some initial value or an "anchor". This anchor is then adjusted and refined to arrive at the final estimate (Prosad, J. M. 2014). According to Kudryavtsev, A., & Cohen, G. (2011), women exhibit stronger anchoring bias. It might be explained using psychological literature that men tend to think more independently, whereas women are more willing to cooperate and follow the ideas suggested by others.

IV. CONCLUSION

Our paper analyzes the differences in heuristic biases based on gender from behavioural finance literature. An analysis of review of literature reveals that male and female investors exhibit different behavioural biases based on their personality traits and gender psychology.

Male investors suffer from overconfidence bias and believe that they are more competent than female investors. Further, they are more optimistic and exhibit risk taking behaviour at the time of investments leading to high volatile return compared to women investors. Female investors, on the other side, suffer from herding, hindsight and anchoring bias. Being more communal and empathic, they follow others sometimes resulting into herding and high anchoring.

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AUTHORS PROFILE

Dr. Amit A Rajdev is working as assistant professor – Finance and Economics – at Atmiya Institute of Technology & Science (AITS), Rajkot (Gujarat). He has over 9 years of academic experience and his area of interest include microfinance, women empowerment, corporate finance and emerging trends in finance. He has published 5 research papers and presented 10 papers in national and international conferences.

Mr. Amit M Raninga is working as assistant professor – Finance and Economics – at Atmiya Institute of Technology & Science (AITS), Rajkot (Gujarat). He has 6 years of academic experience and his are of interest include recent trends in finance, behavioural finance, trends in economy. He has published several research papers in national and international journals and participated in several FDPs.